NETIO-230C/CS

FIRMWARE 3.10

Instruction manual

22. 11. 2011

Koukaam

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Preface

Thank you for purchasing a KOUKAAM product. Before usage, please, carefully read these Operating Instructions and the Quick Installation Guide, which is included in the package. You thus forego erroneous installation or incorrect usage of the device.

Carefully read the following notice. The device you have purchased operates under a certain voltage. Incorrect manipulation with the device may result in damage to the device or injury to the person handling it.

Important notice

1. The manufacturer is not liable for potential damage caused by incorrect usage or placing the device in an unsuitable environment.
2. The device is not intended for usage outdoors.
3. Do not use the device in an environment with strong vibrations.
4. If the device malfunctions, contact your vendor.
5. Unauthorised modification of this device can damage it or cause fire.
6. Prevent contact with fluids; do not expose the device to high temperatures.
7. Protect the device from falling.
8. Only devices approved for use in the electricity network may be connected.
9. If the device malfunctions, disconnect it from the electric power supply and contact your vendor.

1. Introduction

The **NETIO-230C/CS** is a multifunctional power supply controller. This device is intended to control power supply via web interface, telnet, or CGI commands. Thanks to the network administration technology based on IP protocol basis, the user can control or provide a power supply to a connected external device (appliance) via a computer connected to the LAN or Internet network. No special software is necessary to control the device, the Web interface is already integrated in the firmware. Using the web interface, you can easily control and set the entire device and individual outputs.

Imagine that you are travelling around the world and you can directly or via a timer control the power supply to your electrical appliances, such as, computers, servers, routers, electric gates, security/surveillance system or any appliance.

1.1. Characteristics

- Integrated web server
- Support for a broad spectrum of browsers:
  - Internet Explorer
  - Mozilla Firefox
  - Opera
  - Google Chrome
- Four controllable ports
- Four manual control buttons
- Serial port for control of the device
- Serial tunnel (version NETIO-230CS)
- Support for HTTP, SMTP, SNTP, DHCP, DNS, Telnet protocols
- Control using CGI commands
- Possibility to login using an encrypted password
- User authorisation
- LED indication of the actual state of each port
- Safe anti-electric shock design, fire-resistant materials
- Time control - you can set the on/off time for the requested port
- Default setting of port state after switch-on and restart of the device
- Watchdog function for reseting of a blocked network device

- E-mail notification
- Over-voltage protection on the entire device and all the four outputs

1.2. Specifications

Power supply voltage:	90-250 V AC
Maximum switched current:	10 A
Dimensions:	220 × 40 × 125 mm (w × h × d)
Network interface:	1x RJ-45 10/100 Mbit/s
	NETIO 230C: 1x CANON DB9/F (RS232)
	NETIO 230CS: 2x CANON DB9/F (RS232)

1.3. Minimum system requirements

- Computer with Internet browser (Microsoft Internet Explorer, Opera, Mozilla Firefox, …) with JavaScript support enabled.

2. Equipment interface

2.1. Front view, NETIO-230C

Figure 2.1. NETIO-230C, front view

1. Four indicator LED diodes
2. Manual buttons for switching outputs on/off
3. Serial port RS232
4. Connector RJ-45 network interface for connection to Ethernet/Internet.

2.2. Front view, NETIO-230CS

Figure 2.2. NETIO-230CS, front view

1. Four indicator LED diodes
2. Manual buttons for switching outputs on/off
3. Serial port RS232
4. Connector RJ-45 network interface for connection to Ethernet/Internet.
5. Serial tunnel RS232

2.3. Back view, NETIO-230C/CS

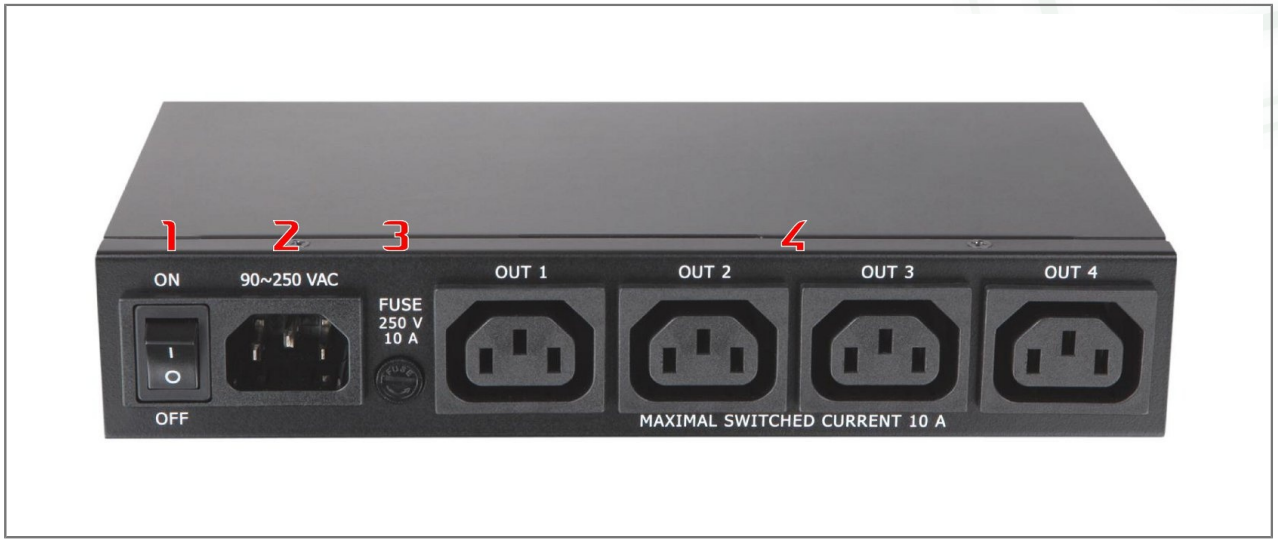

Figure 2.3. NETIO-230C/CS, back view

1. Main Switch
2. Power supply 90-250 VAC
3. Fuse holder for main fuse, 10A
4. Controlled power supply outputs

3. Installation

Before using the device for the first time, check whether the power supply voltage setting is 90-250 V AC.

3.1. Connection of the device

1. Connect the NETIO-230C/CS to the network (switches, router) using the network cable with RJ-45 connectors.
2. Connect the NETIO power supply cable to the socket.
3. Connect the device, which you want to control, to the appropriate output.
4. Switch on the NETIO-230C/CS using the switch on the back of the device.

4. Initial configuration

1. On the enclosed CD, you will find the file **NetioDiscover.exe**, execute it.
2. Click the button **Discover**. This lists all the accessible NETIO devices in your network.
3. Select the device from the list and click the button **Device setup**.

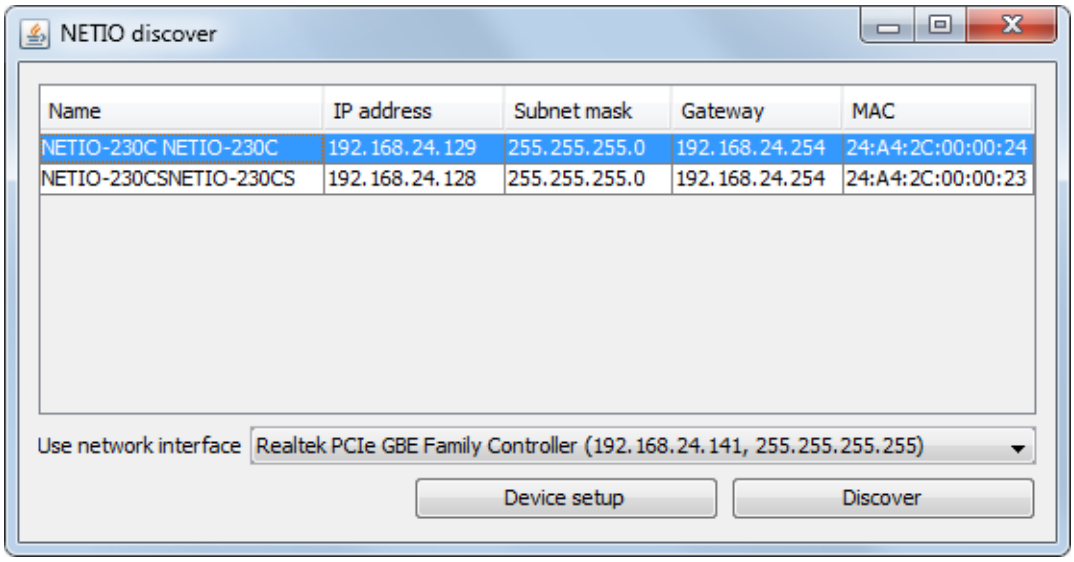

Figure 4.1. Devices found

The configuration window appears - **IP address**, **Subnet mask** and **Gateway IP Address**.

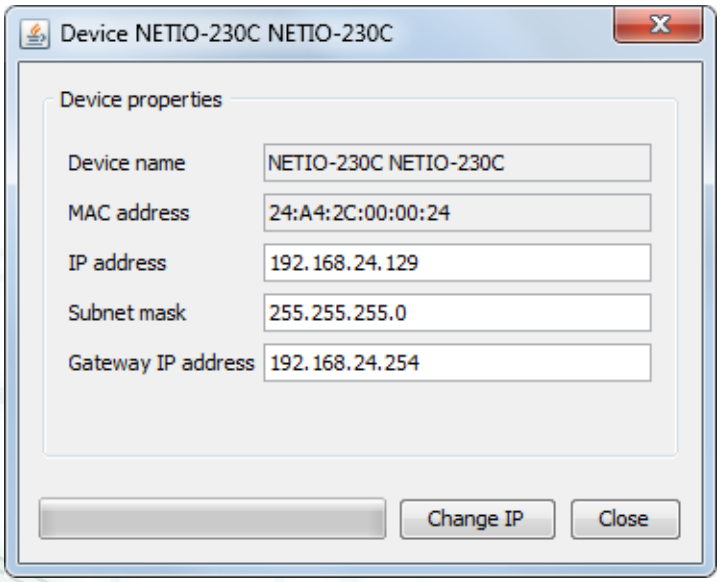

Figure 4.2. Configuration of the device

After editing the network configuration parameters, click the **button Change IP**, which saves the configuration and restarts the device. **If you have a DHCP server in the network and you do not want to change the network settings, you can skip the manual setting and continue to the next step.**

The default IP address of the device is **192.168.10.100** if you do not have a DHCP server in the network. If you have, the device gets the address from the DHCP server.

4. You access the web interface of the device either by entering the IP address into the Internet browser, or by double-clicking the IP address of the device in **NETIO discover**.

5. The login page is displayed. Enter the **User Name**, **Password** and click the **OK** button. You access the device page.

   The default username is: **admin**, the password is: **admin**.

Figure 4.3. Login screen

To login to the web interface, it is necessary to have JavaScript support enabled in the browser.

5. Control and configuration

5.1. Control and configuration of the outputs

5.1.1. Control of outputs

In the left section of the window, click **Manual Control**. The page containing the individual output controls is displayed.

Figure 5.1. Manual control of the outputs

NETIO-230C/CS can control all four outputs simultaneously. Select the output, which should be activated or deactivated and click **Apply**. If you only want to restart the device connected to the given output, select the field **Interrupt** and click **Apply**. The output is deactivated for the period set in the menu **Status & configuration** in the field **Interrupt delay** and then restarted. Short-term interruption of the output can be used only on an active output. If you want to manually activate/deactivate the given output, or restart it, check whether the output´s **Manual** field is selected. If the field is not selected, the device does not accept the manual commands and functions in time switching and *watchdog* mode. The button **All off** is used for switching off all active outputs.

5.1.2. Configuration of output parameters

Click **Status & configuration** in the left part of the window and a list of outputs and information about their current state appears in the window on the right side.

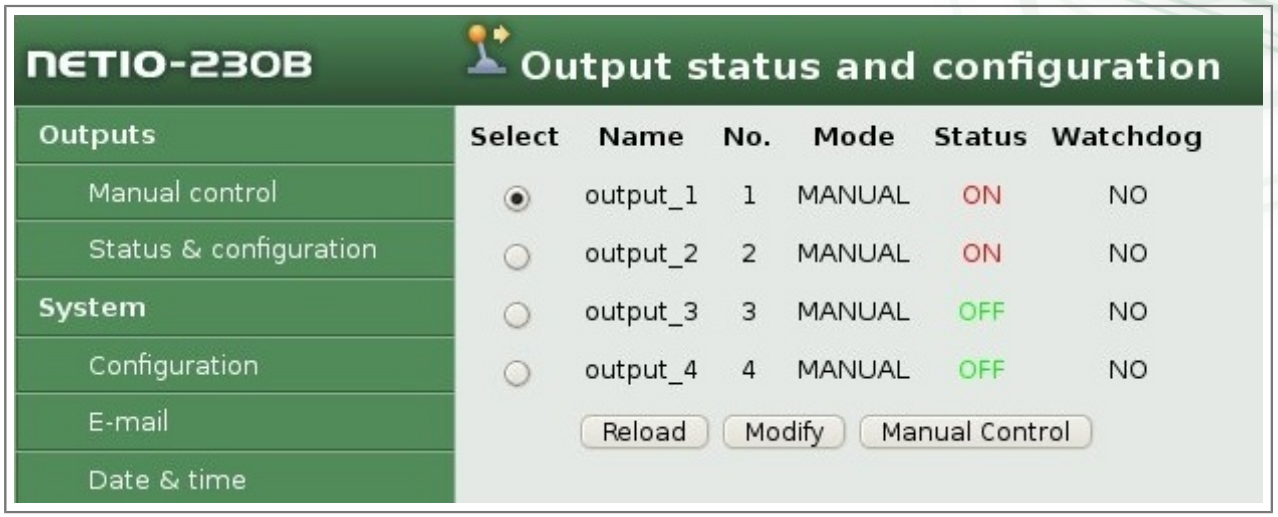

Figure 5.2. Configuration of output parameters

To set a specific output, select the desired output in the column **Select** and click the button **Modify**.

On the form that subsequently opens, you can set the detailed parameters of the selected output. The meaning of the individual parameters is described in the following text.

Configuration of output

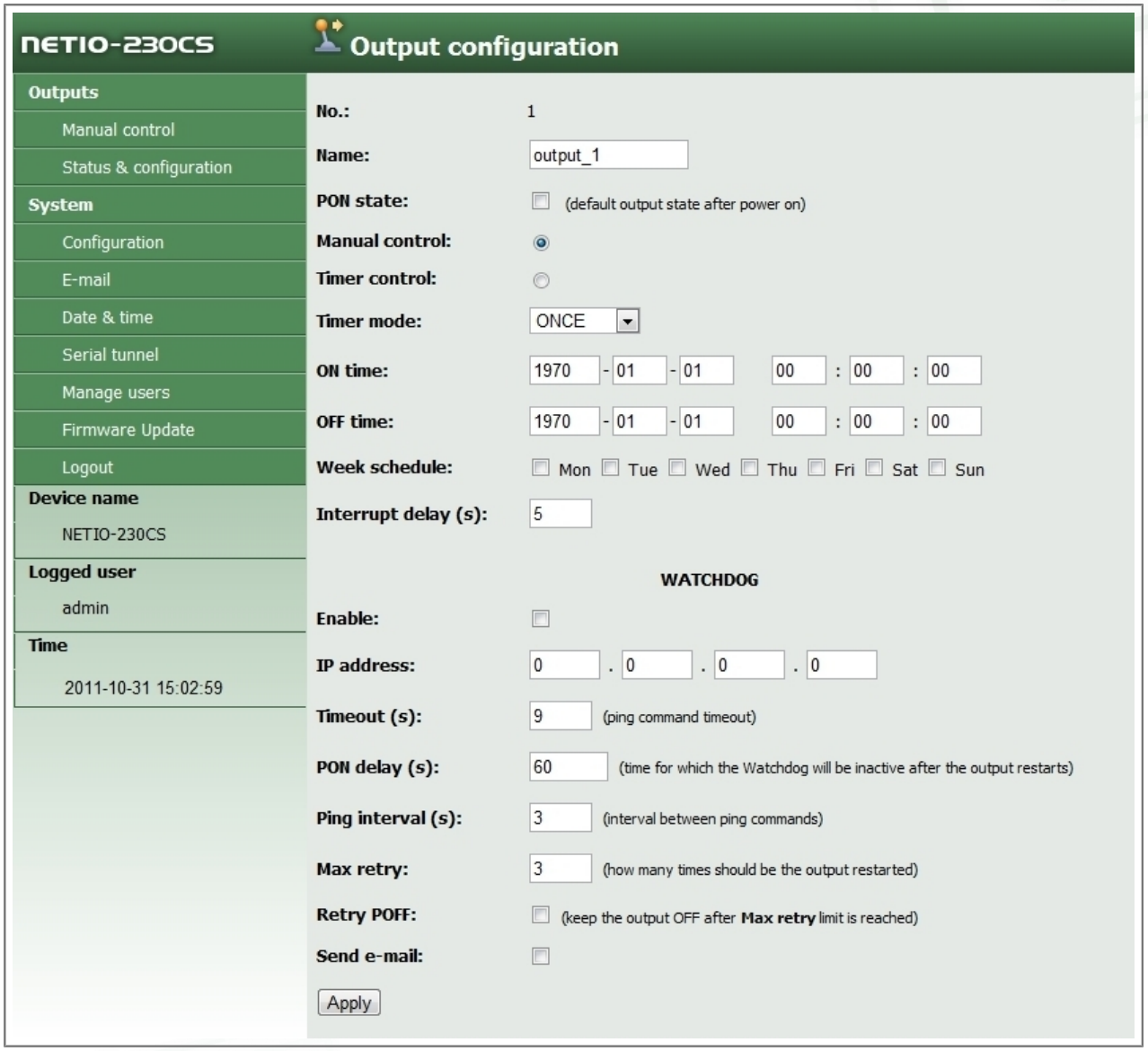

Figure 5.3. Configuration of output

No.: Output Number (1-4)

Name: Output Name

PON state: port state upon switching on the device - if you select the field, the output is activated after start or restart of the device

Manual control: enables manual control of the output, deactivates automatic timer control. This choice has no influence on the Watchdog function.

Time control: if you select this item, the output will be switched by a timer, whose setting is outlined below

Timer mode:	timer mode sets the frequency of the switch-on/switch-off. The options are: ONCE the event occurs only once, DAILY the event is repeated every day or WEEKLY the event is repeated only on the days selected in the "Week Schedule" field.
ON time:	date and time port switched on, if you select the DAILY mode, this will be the date and time of first switch-on
OFF time:	date and time port switched off, if you select the DAILY mode, this will be the date and time of first switch-off
Week schedule:	The selection that determines the days of the week on which the **Timer** function is active if you have selected **WEEKLY** in the **Timer mode** field.
Interrupt delay:	time (in seconds) over which the port will be off when using the **Interrupt** function in the manual setting of the port, or when using **Watchdog** *function*

Watchdog

The **watchdog** function is used to monitor the operation of the device in the network. If the monitored device does not respond to ping queries within a given interval, the output for which this function is set is deactivated for a given period and then reactivated. To restrict continuous switching of the port in case of failure of the monitored device, it is possible to set the maximum number of restart attempts for a given port.

Enable:	enables the **watchdog function**
IP address:	IP address of the network device to be monitored
Timeout:	maximum response time of the monitored device to a ping
PON delay:	time interval (in seconds) over which the **Watchdog** function will not be active after an output restarts. During this period, the monitored device should start operating after a restart.
Ping interval:	interval (in seconds) in which ping queries will be sent to the device
Max retry:	maximum number of port restart attempts if the monitored device does not respond to the ping commands. After expiry of the given number of attempts, the port remains inactive.
Retry POFF:	activation of **Max retry function**
Send e-mail:	send e-mail information if the monitored device did not respond and was restarted

Click the **Apply** button to save the setting.

5.2. System configuration

Here, the user can set the network parameters, e-mail, system time, manage user accounts and install new firmware on the device.

5.2.1. Configuration of network parameters

Upon clicking the **Configuration** button, the system configuration page is displayed. Here, you can set the **IP address**, **Subnet mask**, **Default gateway** and **DNS server** according to your network parameters. If you do not want to use manual configuration of the network, you can switch the **DHCP** by selecting **Enable**, and the device automatically sets the parameters according to the **DHCP** server.

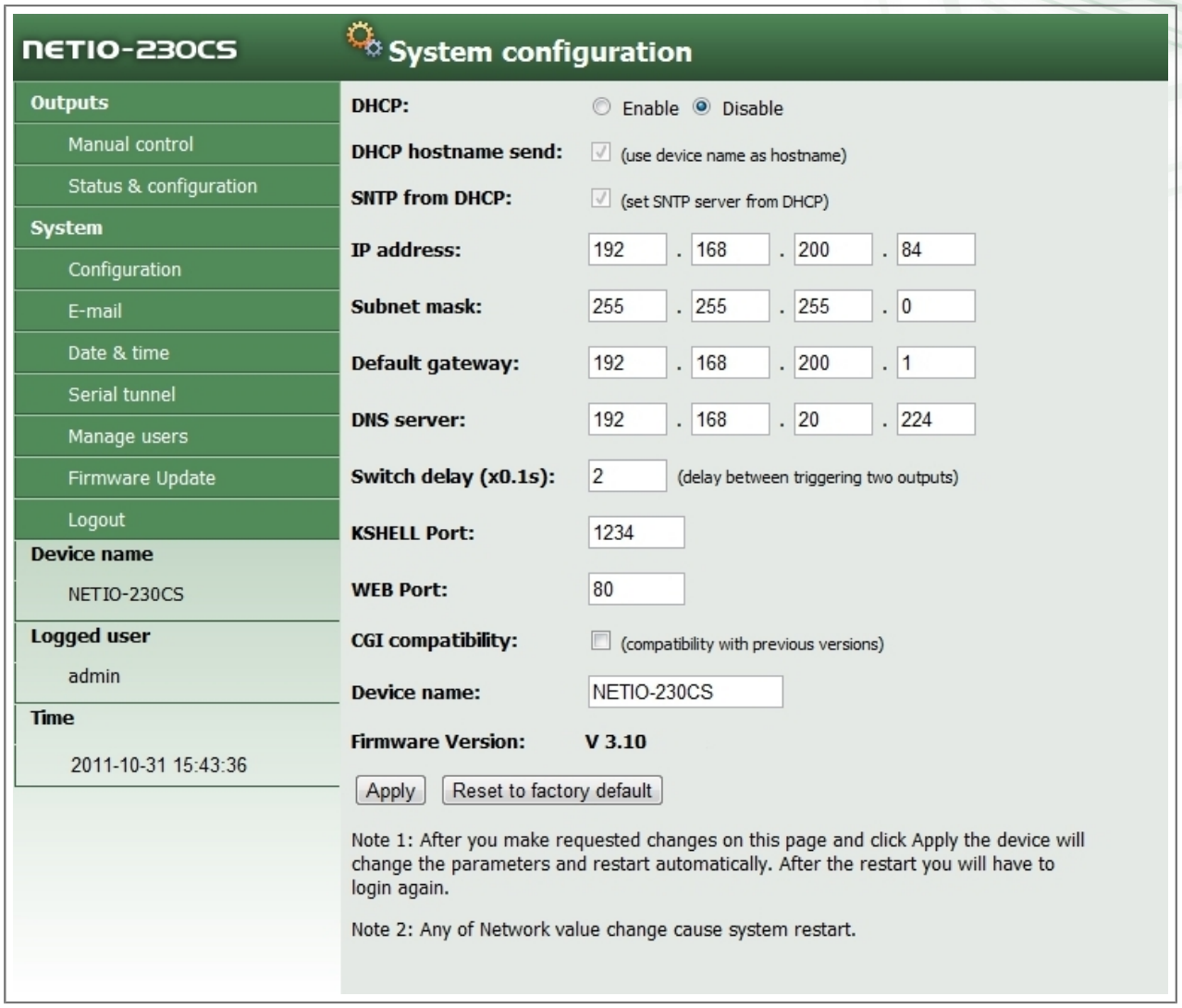
NETIO-230CS
System configuration
Outputs
Manual control
Status & configuration
System
Configuration
E-mail
Date & time
Serial tunnel
Manage users
Firmware Update
Logout
Device name
NETIO-230CS
Logged user
admin
Time
2011-10-31 15:43:36
DHCP: Enable Disable
DHCP hostname send: (use device name as hostname)
SNTP from DHCP: (set SNTP server from DHCP)
IP address: 192 . 168 . 200 . 84
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 200 . 1
DNS server: 192 . 168 . 20 . 224
Switch delay (x0.1s): 2 (delay between triggering two outputs)
KSHELL Port: 1234
WEB Port: 80
CGI compatibility: (compatibility with previous versions)
Device name: NETIO-230CS
Firmware Version: V 3.10
Apply
Reset to factory default
Note 1: After you make requested changes on this page and click Apply the device will change the parameters and restart automatically. After the restart you will have to login again.
Note 2: Any of Network value change cause system restart.

Figure 5.4. Configuration of the network

DHCP: DHCP on/off. When DHCP is off, it is possible to change the parameters manually.

DHCP hostname send: enables sending of device name to DHCP server.

SNTP from DHCP: enables automatic setting of the server for synchronisation of time according to the address set on the DHCP server.

Switch delay (x0.1s): determines the time period between triggering two outputs. This delay is set to protect the device from overload upon switching on all outputs simultaneously .

KSHELL Port, WEB Port: makes it possible to change the default output for access via telnet, or to the web interface of the device.

CGI compatibility: activates the compatibility mode with CGI command format in preceding NETIO-230A (up to fw v2.33) and NETIO-230B (up to fw v3.0) devices. The compatibility mode does not permit input of multiple commands to one CGI. Usage of the **compatibility mode** is not recommended for security reasons.

Device name: in this field, you can name your device for easier identification later. When **DHCP hostname send** is selected, this value is sent to the DHCP server.

Firmware version: shows the currently installed firmware version.

If you edit this page, click **Apply** and the device changes the network parameters and restarts. After restart, you must login again. The button **Reset To Default** is used to reset the device to factory settings.

5.2.2. E-mail configuration

After clicking **Setup e-mail**, a form is displayed in the right side for setting the e-mail parameters.

Figure 5.5. E-mail configuration

From: this address will be shown in the messages as the sender´s address.

To: messages will be sent to this address.

SMTP server: mail server, via which messages will be sent.

Message subject: used to enter the subject of sent messages. Enter the text that should be displayed in the e-mail message body.

Click *Apply* to save the settings. The button **Send test message** is used to send a test message.

Note: The current firmware version does not support SMTP authorization.

5.2.3. Time settings

Click **Date & time** in the menu to display the form for setting time in the right section.

The NETIO-230C/CS supports three time setting methods. You enter the time, either manually or using the SNTP server for automatic time synchronisation, or time synchronisation with the local computer.

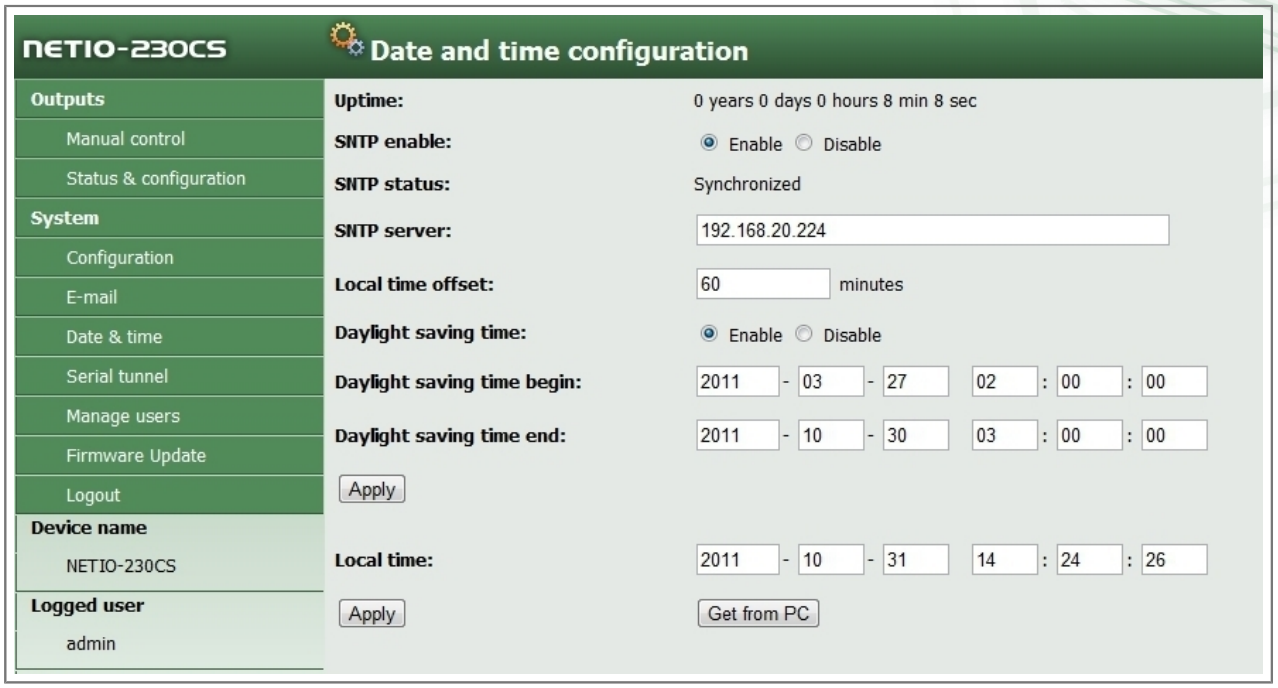

Figure 5.6. Setting the date and time

SNTP enable:	activation of synchronisation with the SNTP server
SNTP status:	displays the synchronisation state
	Synchronized: time synchronised with SNTP server
	Not Synchronized: synchronisation with SNTP server not completed
Local time offset:	manual setting of time zone - time offset in minutes
Daylight saving time:	Activation of summer time
Daylight saving time start:	date and time of summer time start
Daylight saving time end:	date and time of summer time end
Local time:	manual setting of local time with deactivated synchronisation with SNTP server

Setting of the summer time and local time offset applies to both automatic setting and setting via SNTP. If you do not set *Local Time Offset* during synchronisation of time with the SNTP server, the default GMT 0 zone will be used.

5.2.4. Serial tunnel (NETIO-230CS only)

In the case of the NETIO-230CS model, you can use the serial tunnel function for remote control of additional device via the serial link. Connect devices with serial link to the connector marked with the tunnel symbol on the front panel.

Figure 5.7. Serial tunnel symbol on the front panel of the NETIO-230CS device

By permission (selection of the **Enable** field) of the item **serial tunnel**, you activate the serial tunnel function. The tunnel will be accessible at the same IP address as the NETIO-230CS device on the port set in the item Tunnel port (default value 1235). It is further necessary to set communication parameters corresponding to the parameters of the connected device. Speed selection is also available as well as setting of parity (even, odd or none). It is also possible to set symbol parity. The default value is (ignore).

To secure access to the serial tunnel, it is possible to activate the IP filter function. In the following fields, it is then possible to set the computer from which it will be possible to connect the serial tunnel. Access restriction is set by means of two choices. It is necessary to set the IP Address from which the connection will be made and the **Mask parameter** which sets the scope of the addresses, from which it will be possible to connect to the serial tunnel. For example: for permission of access only from IP 192.168.200.1, set the parameters:

Address: 192.168.200.1

Mask: 255.255.255.0

Figure 5.8. Setting of the serial tunnel

5.2.5. Configuration of user accounts

The category **Manage users** in the **System** menu contains the configuration of the user accounts. The device has three user authorisation levels:

Figure 5.9. Configuration of user accounts

Admin: user with full authorisation

User: user that can control the ports, but cannot change system settings

Guest: user that does not have the rights to change any settings and can only see the current state of the ports

As required, select one of the above options. You can change the user account settings in the following categories.

Add: add a new user

Modify: change the password and user authorisation of a selected user

Remove: remove selected user

5.2.6. Firmware update

The **Firmware Update** page is used to download new firmware into the NETIO device. The current firmware version may be found at *http://www.koukaam.se/showproduct.php?article_id=1581*

Upon clicking the item **Firmware Update**, a red frame is displayed in the window on the right side with the notice:

After pressing the Update button, please, wait for completion of the process. After the update process is completed, the device will reboot automatically. You can re-login afterwards.

Figure 5.10. Warning prior to firmware update

To continue, click the **Update** button, the device jumps to firmware download mode. After about three seconds, the **Continue** button is activated. Click on it.

Figure 5.11. Restart before update

Now insert the firmware file with suffix **.bin** and click **Update**. Download of the new firmware takes about 2 minutes. After completion of the update, the device restarts. After re-logging, you will work with the new firmware version.

Figure 5.12. Call to download new firmware file

5.3. Control of the device via Telnet, CGI or serial link

5.3.1. Encrypted login

For login with secure password, you must first get the hash code from the device. You get this either in the return code after connection via KSHELL or the CGI command hash. For calculation, the MD5 sum is used that has been calculated as the following sum <name><password><hash>. This is a 128b number (32 characters) transmitted in a hexadecimal format.

5.3.2. Communication via KSHELL interface

The connection procedure is shown in the following example:

1. Open the window with command line
2. Enter the command **telnet 192.168.10.100 1234** (enter the address after the address of your device, will 1234 with the port, which you have set for KSHELL on the device)
3. The device should list a response similar to the following: **100 HELLO EB5D61F6**. The last 8 characters comprise the hash string used for encrypted login.
4. Now you can login with the command:

   login name password

where **name** is the username and **password** is your password. If you have entered the correct username and password, the device response is **250 OK**. You are now logged on and you can control the NETIO device using the commands from the following chapter.

Every communication session via KSHELL interface has limited validity. In case of inactivity of approximate duration one minute, the session will be terminated automatically. If you need to keep the session active, you can use the command **noop**.

5.3.3. Overview of KSHELL control commands

login <name> <password>

User login with password in open format. Example: Using the command **login admin admin** you log in with the user name **admin** and password **admin**.

clogin <name> <crypted_password>

Login of user with crypted password.

version

Lists the firmware version.

alias

Lists the device name.

quit

Logout. In case of changes to the system settings, device restart is done.

reboot

Logs out, terminates the connection and restarts the device.

noop

Function for maintenance of the connection, no operation is executed.

uptime

Displays the time from the last start/restart.

port <output> [0 | 1 | manual | int]

Listing and setting of output state:

- if you enter only the name of the output without the parameter, the output state is listed (0 - off / 1 - on)
- output number with parameter **0/1** - switches the output on/off
- output number with parameter **'manual'** - switches output to 'manual' control
- output number with parameter **'int'** - interrupts the output

Example: The command **port 2 1** activates output number two.

port list [xxxx]

- without parameter lists the state of all ports
- xxxx is a command for control of all ports simultaneously - in place of **x** enter the commands:
  - 0 deactivate output
  - 1 activate output
  - i call interruption of a given output
  - u leave output unchanged

Example: The command **port list 01ui** deactivates output 1, activates output 2, leaves output 3 unchanged and interrupts output 4.

port setup <output> [<output_name> <mod: manual|timer> <interrupt_delay> <PON_status>]

Command for setting output parameters - the significance of the parameters is as follows:

<output_name> - Entered in quotation marks (it is possible to omit the quotation marks if it does not contain whitespaces)

<mod: manual|timer> - Selection of output mode.

<PON status> - State after switching on: 0 - off / 1 on

Example: The command **port setup 1 "output 1" manual 2 1** sets output 1 name of output 1, activates manual control, sets the interruption time to 2 seconds and sets the status upon switch on to **on**.

port timer <output> <time_format> [<mode: once | daily | weekly> <on-time> <off-time>] <week_schedule>

Timer settings:

<output> - number of the output being set

<time_format> - set time format

t:	HH:MM:SS
dt:	YYYY/MM/DD,HH:MM:SS
ux:	xxxxxxxx (unsigned long with prefix 0x<hex>, 0<octal> or decimal)

<mode once | daily | weekly> - Selection of timer mode.

<on-time> - Outlet on time.

<off-time> - Outlet off time.

<week schedule> - a series of ones and zeros; the first number is Monday, the last is Sunday

Example: The command **port timer 3 t weekly 08:00:00 17:30:00 1111100** switches the timer on at output 3. From Monday to Friday, output 3 will always be switched on at 08:00 and switched off at 17:30.

port wd <output>

Lists the setting of the watchdog function for the given output in the format:

<wd: enable | disable> <wd_ip_addr> <wd_timeout> <wd_PON_delay> <ping_refresh> <max_retry> <max_retry_poff: enable|disable> <send email: enable|disable>

port wd <output> <wd: enable|disable>

Permits or forbids the watchdog function.

Example: The command **port wd 4 enable** activates the watchdog function on output 4

port wd <output> <wd: enable | disable> <wd_ip_addr> <wd_timeout> <wd_PON_delay> <ping_interval> <max_retry> <max_retry_poff: enable|disable> <send_email: enable | disable>

Watchdog setting command. The significance of the parameters is as follows:

<output> - number of the output you are setting

<wd: enable | disable> - enable/disable watchdog function on a given output

<wd_ip_addr> - IP address of the monitored device in seconds

<wd_timeout> - maximum response time of the monitored device

<wd_PON_delay> - time interval (in seconds) over which the *Watchdog* function will not be active after output restart. During this period, the monitored device should start operating after restart.

<ping_interval> - interval (in seconds) in which queries will be sent to the device

<max_retry> - maximum number of output restart attempts if the monitored device does not respond to the ping commands. After expiry of the given number of attempts, the output remains inactive.

<max_retry_poff: enable|disable> - on/off function **max_retry**

<send_email: enable|disable> - on/off of e-mail message transmission at the moment of unavailability of the monitored device or upon overrun of the value **max_retry**

Example: The command **port wd 2 enable 192.168.10.101 10 30 1 3 enable enable** permits the watchdog function on output 2. The device at the address 192.168.10.101 will be monitored. The maximum response time of the monitored device will be 10 seconds. The ping commands will be sent at one-second intervals. If the monitored device does not respond within 10 seconds, output 2 is switched off for 30 seconds. If the device will not respond to ping commands after set switch-off three times in a row, the output is switched off for the fourth time and remains off. A warning e-mail message will be sent to you each time the output is switched off.

system eth

Lists the network interface settings in the format: **<dhcp | manual> <ip_address> <mask> <gateway>**

system eth <dhcp | manual> [<ip_address> <mask> <gateway>]

Sets the network interface - IP address, network mask and gateway are set only if the manual parameter is selected. For the changes to take effect, it is necessary to either restart the system with the command reboot, or switch the NETIO off/on.

Example: The system command **eth manual 192.168.10.150 255.255.255.0 192.168.10.1** sets the network address **192.168.10.150**, network mask **255.255.255.0** and default gateway to **192.168.10.1**.

email server <ip | domain_server_address>

Sets the IP address, or domain name of the SMTP server.

system discover <enable|disable>

Enables/disables network parameter settings from the discover utility.

system discover

Lists whether the system discover selection is enabled, or disabled.

system swdelay <delay>

Sets the delay time between the connection of two ports. The value is given in decimal seconds.

system swdelay

Lists the delay time between the connection of two ports.

system dns <ip>

Sets the IP address of the DNS server. For the changes to take effect, it is necessary either to restart the system using the **reboot** command or switch the NETIO off/on.

system dns

Lists the set address of the DNS server.

system sntp

Lists the settings of the SNTP client.

system sntp <enable|disable> <sntp_ip|domain>

SNTP client settings. Enables, or disables time synchronisation with the SNTP server. The address of the server can be entered as an IP address, or domain name.

system time <YYYY/MM/DD,HH:MM:SS>

Local time settings.

system time

Lists the local time in the format YYYY/MM/DD,HH:MM:SS.

system timezone <+|-offset>

Local time zone settings. Time offset is given in seconds.

system timezone

Lists the time offset from UTC for local time. The value is listed in seconds.

system reset

Reset device to factory settings. After posting this command, the factory setting is restored and the system restarts.

system webport <port>

Sets the device web port. The default value is 80.

system webport

Lists the device web port.

system kshport <port>

Sets the kshell interface port.

system kshport

Lists the kshell interface port. The default value is 1234.

system dhcp

Lists the DHCP client parameter settings.

system dhcp hostname <enable|disable<

Enables posting of device name to DHCP server.

system dhcp sntp <enable|disable>

Enables setting of the SNTP server according to the address set on the DHCP server.

5.3.4. CGI control

The NETIO-230C/CS device can also be integrated easily into your applications using CGI commands.

CGI control of the device is executed by means of commands in the following format:

http://<IP address>/tgi/control.tgi?<command>&<command>

Replace the string **<IP address>** with your device IP address. The string **<command>** is an actual command.

CGI commands:

hash=hash

Sending of a request for an encrypted login string. The command returns **<html> hash </html>**.

login=<p|c>:<user name>:<password>

Login to the device. With the command **login=plain**, you select for unencrypted login. For encrypted login, select the command **login=crypted**. Other command parameters are the username and password.

The returned values are described in chapter 5.3.6 – „Returned values for KSHELL, CGI and the serial line Section 5.3.6, "Return values for KSHELL, CGI and serial link". In case of usage of CGI commands, the return value is enclosed in the HTML tags **<html>** and **</html>**.

quit=quit

Logout from the system. The return value is **<html>110 BYE</html>**. This command can be used only in CGI compatible mode with older devices.

port=<list|xxxx>

The parameter list - lists the output state in the format **<html> port1 port2 port3 port4 </html>**, where **port1** to **port4** are values **0** for output off and **1** for output on. The parameter **xxxx** is a string for setting the port. In place of the symbol **x** enter **0**, **1**, **u** or **i** just as applies to port setting via Telnet.

All commands can be shortened to individual symbols. For example, the command **port=list** can shortened to **p=l**. The commands can be joined in a string using the symbol **&**.

Example:

http://192.168.200.84/tgi/control.tgi?login=p:admin:admin&p=10ui

This command executes login to the device at the address **192.168.200.84** with username **admin**, password **admin** and sets the output. It switches on output 1, switches output 2 off, leaves output 3 in actual state and interrupts output 4 for the time set in the actual setting of the output.

5.3.5. Communication via a serial link

For communication with the NETIO-230C/CS device via a serial link, connect the device to a PC via a direct cable with **Canon DB9F** and **DB9M** connectors. The communication parameters are as follows:

- Transmission speed: 19200 baud
- Data format: 8N1

The command format is identical to that of the commands for communication via KSHELL interface. The list of commands is in the following chapter.

Note: for communication via serial link, you do not need to login as applies to communication via KSHELL interface. This means that after connection of the cable, you can directly enter the kshell commands to the terminal.

5.3.6. Return values for KSHELL, CGI and serial link

100 HELLO <hash>

Device response after connection. Hash after HELLO can be used for encrypted login.

110 BYE

You have been logged off.

120 Rebooting....

Restarting

130 CONNECTION TIMEOUT

Connection time-out.

250 OK

Command executed successfully. The value returned by the called command may follow.

500 INVALID VALUE

Incorrectly entered value.

501 INVALID PARAMETER

Incorrectly entered parameter.

502 UNKNOWN COMMAND

Incorrectly entered or unknown command.

503 INVALID LOGIN

Incorrectly entered username or password.

504 ALREADY LOGGED IN

You are already logged in.

505 FORBIDDEN

You are not authorised to execute the given command. Log in as user with higher authorization.

506 INPUT LINE TOO LONG

You have sent an input line that is too long. Shorten the command and repeat the action.

507 TOO MANY CONNECTIONS

Maximum number of connections exceeded. Wait for someone to log-off. If inactive users are logged on, they will be disconnected automatically upon expiry of the time limit.

5.4. Manual control

Apart from control via PC, the device can also be controlled using the four buttons on the front panel. To switch the given output on or off, press the button for 2 seconds. If the output was off, it comes on, if it was on, on the contrary it goes off. The buttons correspond to the outputs 1-4, from left to right. The state of the individual ports is signalled by the green diode above the button for the given port that either switches on or off.

5.5. Status LED diodes

The status LED diodes on the device inform the user not only about the status of the output, but also provide him with some information about the status of the system.

The green LED diodes provide information about the actual status of the output. If diodes 1-4 are green, the individual outputs are on. If any of the concerned diodes is not green, this specific output is off.

The red LED diodes inform the user about different statuses of the entire device. The following states are possible:

Red LED 1 is on:	initialisation of network interface; if it remains on, the network is not available.
Red LED 2 is on:	posting of query to DHCP
Red LED 3 is blinking:	firmware update in progress
Red LED 4 is on:	device is in firmware update mode

5.6. Troubleshooting

5.6.1. Forgotten password. Reset to factory settings

If you forget your password, it is possible to reset to factory mode. This is done by pressing and holding buttons 1 and 2 with device on. Hold the buttons until the device beeps 2x. During the resetting process, all the LED diodes are red. As soon as reset is completed, the LED diodes go off.

5.6.2. Problem with update of firmware

If a problem arises during updating the firmware (e.g. power failures, or switching off the device before the update is completed), it is possible to force putting the device into operation in firmware update mode. You do this by pressing button 4 with device on. Hold the button until the device beeps. After this, connect to the device IP address via the browser. Continue to enter the firmware file as shown in the chapter which describes the firmware update process.

5.6.3. Changing the fuse

If the NETIO-230C/CS stops working and the main switch is not illuminated, it is possible that the fuse has been blown. Before actual replacement of the fuse, check to ensure that the NETIO-230C/CS **IS OFF** and **DISCONNECTED FROM THE POWER SUPPLY**. Also disconnect all the devices connected to the outputs. To replace the fuse, unscrew the fuse holder (ideally using a flat screwdriver). Always replace the fuse with a new fuse of same type (250V 10A, type F). After insertion of the correct fuse, replace the plastic holder and screw it into place. Connect the power supply cable and try to switch on the device. Before reconnecting all the devices to the outputs, check whether the fuse was not blown by a fault on the connected devices.

Conclusion

The manufacturer bears no responsibility for any technical or printing errors and reserves the right to make any changes in the product and in this user manual without prior notice. Any such changes will be announced via the manufacturer's website *www.koukaam.se*.

The manufacturer does not provide warranties of any kind whatsoever with regard to any information given in this user manual or any derived warranties regarding product saleability or fitness for a specific purpose.

In particular, the manufacturer does not provide any warranties for defects caused by incorrect use of the product, failure to abide by the instructions and recommendations stated in the user manual and for any defects caused by unprofessional activities of third parties outside the manufacturer's authorized service shop.

We believe that you will be satisfied with our product. In case of any questions or comments relating to the functionality of the NETIO product, please do not hesitate to contact us.

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